

FORM PTO-1390
(REV 12-29-99)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

7376-2

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

09/600359

INTERNATIONAL APPLICATION NO.
PCT/GB99/00044INTERNATIONAL FILING DATE
January 18, 1999PRIORITY DATE CLAIMED
January 16, 1998

TITLE OF INVENTION BARRIER MATERIALS AND PRODUCTS PRODUCED THEREWITH

APPLICANT(S) FOR DO/EO/US Robert Moule and Simon Moule

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☐ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). (unsigned)
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A FIRST preliminary amendment.
☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:
Copy of WO 99/36755
Copy of International Preliminary Examination Report

"Express Mail" label number EL111281327US. Date of Deposit July 14, 2000

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR § 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Gail Mercer
Signature of Person Mailing Correspondence

U.S. APPLICATION NO. 09/6003590 INTERNATIONAL APPLICATION NO. PCT/GB99/00044

ATTORNEY'S DOCKET NUMBER

17. ☒ The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO **\$970.00**

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO **\$840.00**

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **\$690.00**

International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) **\$670.00**

International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) **\$96.00**

ENTER APPROPRIATE BASIC FEE AMOUNT =

CALCULATIONS PTO USE ONLY

\$ 840.00

Surcharge of **\$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).

\$

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	16 - 20 =	0	X \$18.00
Independent claims	2 - 3 =	0	X \$78.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$260.00

\$

TOTAL OF ABOVE CALCULATIONS = \$ 840.00

Reduction of 1/2 for filing by small entity, if applicable. A Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28).

\$

SUBTOTAL = \$ 840.00

Processing fee of **\$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)).

\$

TOTAL NATIONAL FEE = \$ 840.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **\$40.00** per property

\$

TOTAL FEES ENCLOSED = \$ 840.00

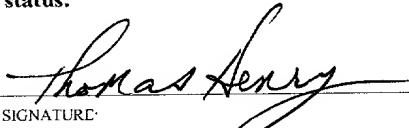
Amount to be refunded: \$
charged: \$

- a. ☒ A check in the amount of \$ 840.00 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 23-3030. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO

Thomas Q. Henry
Woodard, Emhardt, Naughton, Moriarty & McNett
111 Monument Circle
3700 Bank One Tower
Indianapolis, IN 46204


SIGNATURE:
Thomas Q. Henry
NAME
28,309
REGISTRATION NUMBER

14.SEP.2000 14:10

MARKS&CLERK

7376-2:TQH:94991; WENRMA SB/10 (4-86)

STATEMENT CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) & 1.27 (b))—SMALL BUSINESS CONCERN		Docket Number (Optional) 7376-2
Applicant, Patentee, or Identifier: <u>Robert Moule, Simon Moule</u>		
Application or Patent No.: <u>09/600,359</u>		
Filed or Issued: _____		
Title: <u>BARRIER MATERIALS AND PRODUCTS PRODUCED THEREWITH</u>		
I hereby state that I am <input type="checkbox"/> the owner of the small business concern identified below: <input checked="" type="checkbox"/> an official of the small business concern empowered to act on behalf of the concern identified below:		
NAME OF SMALL BUSINESS CONCERN	Food Guardian Limited	
ADDRESS OF SMALL BUSINESS CONCERN	Ashfields, Leigh Sinton, Worcestershire WR13 5DH United Kingdom	
<p>I hereby state that the above identified small business concern qualifies as a small business concern as Defined in 13 CFR Part 121 for purposes of paying reduced fees to the United States Patent and Trademark Office. Questions related to size standards for a small business concern may be directed to: Small Business Administration, Size Standards Staff, 406 Third Street, SW, Washington, DC 20418.</p> <p>I hereby state that rights under contract or law have been conveyed to and remain with small business concern identified above with regard to the invention described in:</p> <p><input type="checkbox"/> The specification filed herewith with title as listed above. <input checked="" type="checkbox"/> The application identified above. <input type="checkbox"/> The patent identified above.</p> <p>If the rights held by the above identified small business concern are not exclusive, each individual, Concern, or organization having Rights in the invention must file separate statements as to their status as small entities, and no rights to the invention are held by any person, other than the inventor, who would Not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any Concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit Organization under 37 CFR 1.9(e).</p> <p><input type="checkbox"/> Each person, concern, organization having any rights to the invention is listed below: <input checked="" type="checkbox"/> No such person, concern, or organization exists. <input type="checkbox"/> Each such person, concern, or organization is listed below. Separate statements are required from each named person, concern, or organization having rights to the invention stating their status as small entities. (37 CFR 1.27)</p> <p>I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after date on which status as a small entity is no longer appropriate (37 CFR 1.28 (b)).</p>		
NAME OF PERSON SIGNING	<u>Arnold Glynn Hubbard</u>	
TITLE OF PERSON IF OTHER THAN OWNER	<u>Managing Director</u>	
ADDRESS OF PERSON SIGNING	<u>28 Park Avenue, Bushey, Hertfordshire, WD2 2BH, United Kingdom</u>	
SIGNATURE	<u>X <i>AS Hubbard</i></u>	DATE <u>X 17 August 2000</u>

7376-2:TQH:94989; WENMM SB/09 (4-09)

**STATEMENT CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) & 1.27 (b))—INDEPENDENT INVENTOR**Docket Number (Optional)
7376-2Applicant, Patentee, or Identifier: Robert Moule, Simon MouleApplication or Patent No.: 09/600,359

Filed or Issued: _____

Title: BARRIER MATERIALS AND PRODUCTS PRODUCED THEREWITH

As a below named inventor, I hereby state that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees to the Patent and Trademark Office described in:

- ☐ The specification filed herewith with title as listed above.
☐ The application identified above.
☐ The patent identified above.

I have not assigned, granted, conveyed, or licensed, and am under no obligation under contract of law to assign, grant, convey, or license, any rights in the invention to any person who would not qualify as an independent inventor under 37 CFR 1.9 (c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9 (d) or a nonprofit organization under 37 CFR 1.9 (e).

Each person, concern, or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract of law to assign, grant, convey, or license any rights in the invention is listed below:

- ☐ No such person, concern, or organization exists.
☒ Each such person, concern, or organization is listed below.
☐ Each person, concern, organization having any rights to the invention is listed below:

Separate statements are required from each named person, concern, or organization having rights to the invention stating their status as small entities. (37 CFR 1.27)

NAME OF SMALL BUSINESS CONCERN
ADDRESS OF SMALL BUSINESS CONCERN

Food Guardian Limited
Ashfields, Leigh Sinton, Worcestershire WR13 5DH
United Kingdom

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate (37 CFR 1.28 (b)).

ROBERT MOULE

NAME OF INVENTOR
(typed or printed)

Signature of Inventor

Date

SIMON MOULE

NAME OF INVENTOR
(typed or printed)

Signature of Inventor

Date

Simon Moule

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:)
)
Robert Moule et al.)
)
Serial No. (unknown))
)
Filed Herewith)
)
BARRIER MATERIALS AND)
PRODUCTS PRODUCED THEREWITH)
)
US National Stage of PCT/GB99/00044)
International Filing Date January 16, 1998)

PRELIMINARY AMENDMENT

Hon. Assistant Commissioner of Patents

Washington, D.C. 20231

Sir:

Please enter the following Preliminary Amendment in the above-identified patent application. The Commissioner is hereby authorized to charge payment of any additional fees associated with this application or credit any overpayment to Deposit Account No. 23-3030.

IN THE CLAIMS

Please cancel claims 1-16.

Please add new claims 17-32.

"Express Mail" label number EL 111 281 3274S. Date of Deposit July 14, 2000. I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR § 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Trademarks, 2900 Crystal Dr., Arlington, Virginia 22202-3513

Gail Mercer
Signature of Person Mailing Correspondence

--17. A marking element for indicating whether a pre-defined temperature condition has been maintained comprising a first material capable of flowing above a predetermined temperature separated from a second absorbent material by a heat disruptable barrier layer, the first and second materials being such that when the barrier layer is punctured and the predetermined temperature is exceeded the first material flows in the second material to produce a detectable change wherein the heat disruptable barrier layer is comprised of a heat disruptable material associated with an element capable of being inductively heated by electromagnetic energy to effect disruption of said material.

18. A marking element as claimed in claim 17 comprising a lower layer which, together with the heat disruptable barrier layer, forms a reservoir for the first material, and an absorbent layer provided on the opposite side of the barrier layer to said reservoir.

19. A marking element as claimed in claim 17 wherein the absorbent layer is overlaid by a transparent film.

20. A marking element as claimed in claim 17 wherein the heat disruptable material is a film.

21. A marking element as claimed in claim 20 wherein the heat disruptable material is a plastics film.

22. A marking element as claimed in claims 17 wherein the inductively heatable element is provided on the heat disruptable material.

23. A marking element as claimed in claim 17 wherein the inductively heatable element is provided by a conductive ink.

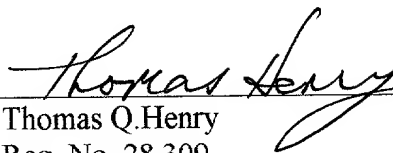
24. A marking element as claimed in claim 23 wherein the conductive ink is a metallic ink or a graphite loaded ink.

25. A marking element as claimed in claim 17 wherein the inductively heatable element is provided by metal, carbon or an electrically conductive plastics or polymeric material.
26. A marking element as claimed in claim 25 wherein the inductively heatable element is of metal in the form of a film, sheet or foil.
27. A marking element as claimed in claim 17 wherein the barrier layer is disruptable by radiofrequency energy.
28. A marking element as claimed in claim 17 which is disruptable by microwave energy.
29. A method of activating a marking element as claimed in claim 1, the method comprising subjecting the marking element to electromagnetic energy capable of inductively heating said inductive heatable element to effect disruption of the barrier layer.
30. A barrier material comprised of a heat disruptable material associated with an element capable of being inductively heated by electromagnetic energy to effect disruption of said material.
31. A barrier material as claimed in claim 30 and comprising a heat disruptable material associated with an element capable of being inductively heated by electromagnetic energy to effect disruption of said material.
32. A method of disrupting a barrier material as claimed in claim 30, the method comprising subjecting the barrier material to electromagnetic energy capable of inductively heating said element to effect disruption of the material.--

REMARKS

Consideration and allowance of the above-identified patent application is requested.

Respectfully submitted,

By: 
Thomas Q. Henry
Reg. No. 28,309
Woodard, Emhardt, Naughton
Moriarty & McNett
Bank one Center/Tower
111 Monument Circle, Suite 3700
Indianapolis, IN 46204-5137
(317) 634-3456

107-1:TQH-94321

107-1:TQH-94321

WO 99/36755

1/PRTS

PCT/GB99/00044

09/600359

534 Rec'd PCT/PTC 14 JUL 2000

BARRIER MATERIALS AND PRODUCTS PRODUCED THEREWITH

The present invention relates to heat disruptable barrier materials (particularly but not exclusively thin plastics films), to the disruption of such materials, and to products incorporating these materials.

There are numerous examples of products incorporating barrier materials which must be disrupted (e.g. punctured) to allow communication between both sides of the barrier. Examples of such products include containers which contain food to be microwaved and which are covered with a film or the like which must be punctured prior to the food being microwaved to ensure that steam is vented from the container. Whilst it may be a relatively simple task manually to puncture the film for a single product item, it obviously becomes time consuming to repeat the operation for a plurality of items, e.g. for catering on a commercial scale.

A further problem of puncturing barrier layers occurs when the barrier is beneath a further layer which itself must not be punctured. A particular example of this problem is encountered in the marking element disclosed in WO-A-9208115 which is used for indicating whether a product has been maintained under a particular temperature or temperature-time condition. More particularly the marking element as manufactured comprises an ink separated from an absorbent wick by a heat disruptable film, all of these components being provided beneath an upper film layer of higher melting/softening temperature than the heat disruptable film.

By way of further explanation, the marking element may be one which is to be used for indicating whether frozen food has been stored at a higher temperature (e.g. room temperature) than is required. As such, the ink is one which is (i) not capable of flowing at the correct storage temperature of the food, but (ii) capable of flowing at or above the temperature at which the food should not be stored. When the marking element is manufactured it is necessary to ensure that the ink (which will flow at the

09600359 09 JUL 2000

According to a second aspect of the present invention there is provided a method of activating a marking element as defined in the previous paragraph, the method comprising subjecting the marking element to electromagnetic energy capable of inductively heating said inductive heatable element to effect disruption of the barrier layer.

The heat disruptable material may for example be a film, most preferably a plastics film.

The inductively heatable element may of any material with the requisite conductivity, e.g. metal, carbon or a conductive plastics or polymeric material. Conveniently the inductively heatable element is provided by a marking of an electrically conductive (e.g. metallic) ink or patch on or otherwise associated with the heat disruptable material. Further possibilities for the element are a foil, sheet or film of a metal. A still further possibility is a marking of a graphite (carbon) loaded ink.

The inductively heatable element may be on either side of, or within, the barrier material and may be of any desired shape appropriate to the electromagnetic energy to be used, e.g. a disc or an annulus. The annulus may be of uniform width across its inner and outer edges (e.g. as provided by two concentric circles) or may have one or more "restrictions" around its width.

Preferably also the electromagnetic energy for inductively heating the element is radiofrequency energy (10^4 Hz to 3×10^{12} Hz). Preferably the frequency is from 50 kHz to 1 Mhz more typically 100 kHz to 500 kHz, e.g. 160 kHz to 180 kHz. The power may be 100 W to 1000 W, typically 500 W.

In the marking element according to the invention, the barrier layer together with the first and second materials may be provided beneath an outer layer (e.g. an

DocId:32000000

outer film layer). The barrier layer may be selectively disrupted by the use of electromagnetic energy of the appropriate frequency thus avoiding the need for the outer covering layer to be of a higher melting/softening temperature than the barrier layer and the need to use a heated probe. A related advantage is that the marking element may be activated simply by positioning the element (e.g. *in situ* on a product to be "monitored" by the element) close to an electromagnetic field of the appropriate frequency to effect disruption of the barrier layer. This is a much more convenient technique to the use of a heated probe.

The barrier material as employed in the marking element is an important feature of the invention in its own right and therefore according to a third aspect of the present invention there is provided a barrier material comprised of a heat disruptable material associated with an element capable of being inductively heated by electromagnetic energy to effect disruption of said material.

According to a fourth aspect of the present invention there is provided a method of disrupting a barrier material as defined in the previous paragraph, the method comprising subjecting the barrier material to electromagnetic energy capable of inductively heating said element to effect disruption of the material.

The electromagnetic energy may be microwave energy such that the barrier material of the invention may be used, for example, as a covering for a container which is intended to be heated in a microwave oven. As such, the microwave energy effects inductive heating of the element resulting in the disruption of the covering. As such the need for manual puncturing is avoided.

The barrier material of the invention is particularly suitable for use in products in which a barrier to be punctured is provided beneath at least one further layer which is required to remain intact since using electromagnetic energy it is possible selectively to disrupt the barrier layer.

WQ 99/36755

PCT/GB99/00044

5

The invention will be further described by way of example only with reference to the accompanying drawings, in which

Fig. 1 is an exploded perspective view of one embodiment of marking element in accordance with the first aspect of the invention.

Fig. 2 is a cross-section of the marking element illustrated in Fig. 1 prior to activation thereof;

Fig. 3 is a cross-section similar to Fig. 2 but shows the marking element in an activated condition and also indicating that a product has been stored above a predetermined temperature; and

Fig. 4 is a plan view of the label in the condition shown in Fig. 3.

As shown in Fig. 1, a marking element 1 in accordance with the invention is removably mounted on a carrier sheet 2 and is a laminar structure comprised of layers 3-6 described in more detail below and an ink 7 (not shown in Fig. 1 but see Fig. 2).

In more detail, the layer 4 is comprised of a heat disruptable plastics film 8 provided with an inductively heatable element in the form of a marking 9 of an inductively heatable conductive ink. Alternatively the inductively heatable element may for example be provided by a thin metal disc or a metal joint. At its undersurface, barrier layer 4 is bonded around its peripheral surface to the corresponding area of the upper surface of the layer 3 so that a reservoir space (in which the ink 7 is located) is formed between the layers 3 and 4. The undersurface of layer 3 is releasably attached to carrier 2 so that the label 1 may be removed therefrom and attached (by the adhesive) to a product to be monitored.

The indicator layer 5 is of paper which has been treated with a resin so that only a central area 10 (shown in Fig. 1 in the shape of a thermometer) remains absorbent, the remaining area of the layer 5 as depicted by the hatched lines being non-absorbent. The undersurface of layer 5 is bonded in the hatched areas to the upper surface of the barrier layer 4 and it will be noted from Fig. 1 that the marking 9 of reflective ink (on the barrier layer 4) locates immediately beneath the "bulb" of the thermometer-shaped absorbent area 10 of indicator layer 5.

Layer 6 is a clear plastics layer which overlies, and is bonded to the indicator layer 5. The absorbent area 10 is of contrasting colour to the ink 7.

In the marking element 1 as shown in Figs. 1 and 2, the barrier layer 4 prevents contact between the ink 7 and the absorbent area 10 of indicator layer 5. The ink 7 is one which (once the barrier layer has been disrupted - see below) is only capable of flowing in the absorbent area 10 of layer 5 if the label 1 is above a predetermined temperature. The ink may, for example, comprise an alkyl (particularly a C_{14} alkyl) ester of a long-chain fatty acid. Examples of esters which may be used include ethyl myristate, butyl myristate and butyl laurate. It will of course be appreciated that the ink may comprise a mixture of esters to ensure that the ink flows above a particular temperature. A further possibility is for the ink to comprise a polymeric material which reversibly fuses above a predetermined temperature, e.g. a thermo-reversible wax. Inorganic salts (e.g. sodium or potassium chloride) can also be incorporated in the polymeric material for providing the required temperature of fusion.

For the purposes of "activation", the label 1 is subjected to a temperature at which the ink 7 will not flow. Subsequently, the label 1 (which may be attached to the product to be monitored) is placed close to an electromagnetic field or sufficient energy (flux density) to effect inductive heating of the ink 9. This causes disruption

(puncturing) of the film 8 beneath the "bulb" of the absorbent area 10 of layer 5 which therefore comes into communication with the reservoir of ink 7

Provided that the product to which the marking element 1 is attached is maintained below a predetermined temperature, the ink is unable to flow (or at least unable to flow to any substantial extent) and does not colour the absorbent area 10. If however the product is raised above the permitted temperature then the ink will flow into, and indelibly mark, the area 10 as depicted in Figs. 3 and 4.

Barrier materials of similar construction to layer four may be used in applications other than a marking element. Such layers may, for example, be used as a covering for a container which is intended to be heated in a microwave oven such that inductive heating of the inductively heatable element results in disruption of the covering.

13 JUL 2000 16:52:00

CLAIMS

1. A marking element for indicating whether a pre-defined temperature condition has been maintained comprising a first material capable of flowing above a predetermined temperature separated from a second absorbent material by a heat disruptable barrier layer, the first and second materials being such that when the barrier layer is punctured and the predetermined temperature is exceeded the first material flows in the second material to produce a detectable change wherein the heat disruptable barrier layer is comprised of a heat disruptable material associated with an element capable of being inductively heated by electromagnetic energy to effect disruption of said material.
2. A marking element as claimed in claim 1 comprising a lower layer which, together with the heat disruptable barrier layer, forms a reservoir for the first material, and an absorbent layer provided on the opposite side of the barrier layer to said reservoir.
3. A marking element as claimed in claim 1 or 2 wherein the absorbent layer is overlaid by a transparent film.
4. A marking element as claimed in any one of claims 1 to 3 wherein the heat disruptable material is a film.
5. A marking element as claimed in claim 4 wherein the heat disruptable material is a plastics film.
6. A marking element as claimed in any one of claims 1 to 5 wherein the inductively heatable element is provided on the heat disruptable material.

WO 99/36755

PCT/GB99/00044

9

7. A marking element as claimed in any one of claims 1 to 6 wherein the inductively heatable element is provided by a conductive ink.
8. A marking element as claimed in claim 7 wherein the conductive ink is a metallic ink or a graphite loaded ink.
9. A marking element as claimed in any one of claims 1 to 6 wherein the inductively heatable element is provided by metal, carbon or an electrically conductive plastics or polymeric material.
10. A marking element as claimed in claim 9 wherein the inductively heatable element is of metal in the form of a film, sheet or foil.
11. A marking element as claimed in any one of claims 1 to 10 wherein the barrier layer is disruptable by radiofrequency energy.
12. A marking element as claimed in any one of claims 1 to 10 which is disruptable by microwave energy.
13. A method of activating a marking element as claimed in any one of claims 1 to 12, the method comprising subjecting the marking element to electromagnetic energy capable of inductively heating said inductive heatable element to effect disruption of the barrier layer.
14. A barrier material comprised of a heat disruptable material associated with an element capable of being inductively heated by electromagnetic energy to effect disruption of said material.
15. A barrier material as claimed in claims 13 which is as defined in any one of claims 1 to 12.

WO 99/36755

PCT/GB99/00044

16. A method of disrupting a barrier material as claimed in claim 14 or 15, the method comprising subjecting the barrier material to electromagnetic energy capable of inductively heating said element to effect disruption of the material.

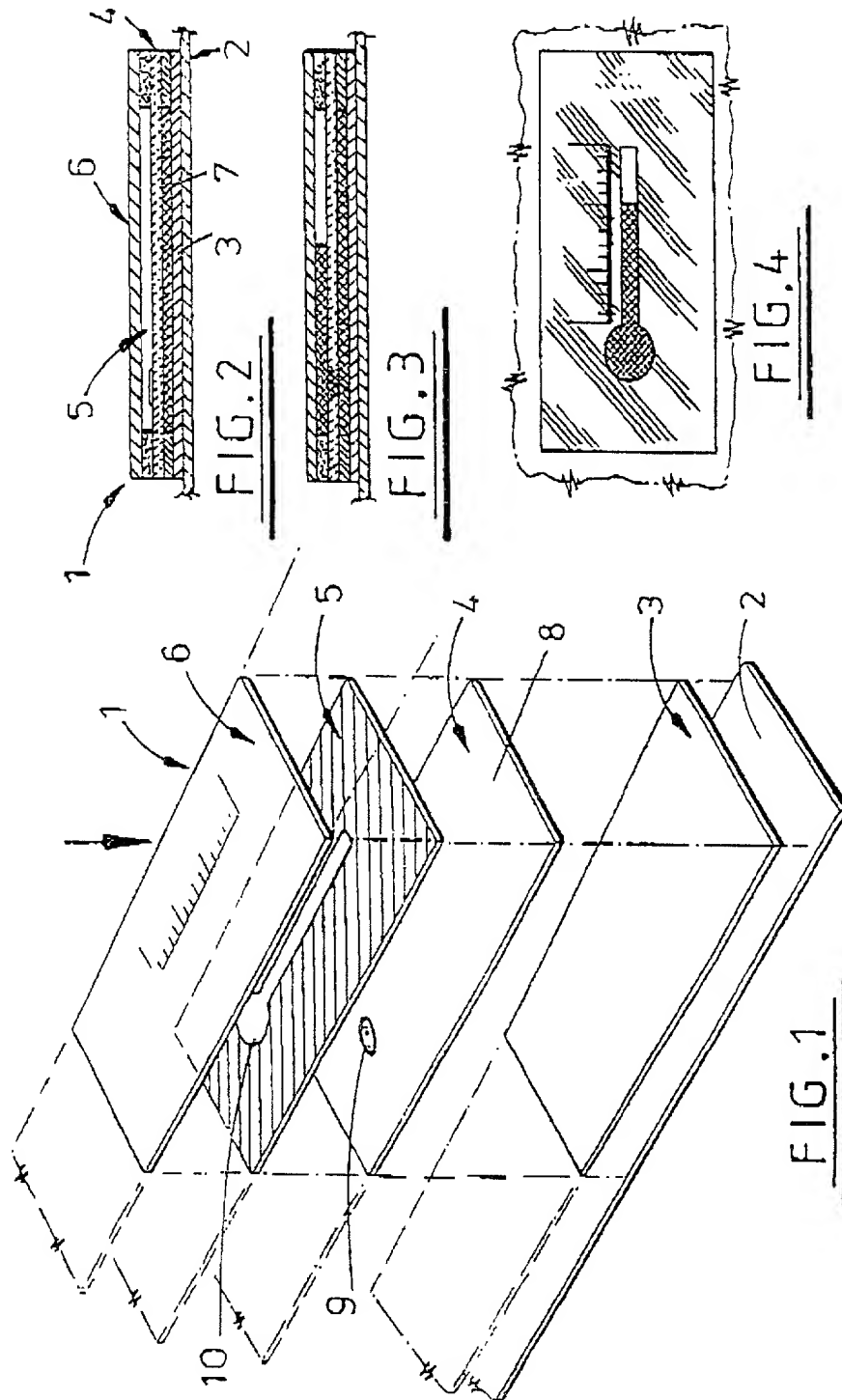
16 JUL 2000 09:49:00 MARKS & CLERK M/C 0161 236 5846

WO 99/36755

PCT/GB99/00044

1-1

09/600359



SUBSTITUTE SHEET (RULE 26)

WENMM SB/C1 (2-99)

**DECLARATION AND POWER OF
ATTORNEY
FOR PATENT APPLICATION**

Attorney Docket Number

7376-2

First Named Inventor

Robert Moule

☐ Declaration submitted with
initial filing☒ Declaration
Submitted after
Initial Filing
(surcharge (37 CFR
1.16(e)) required)

COMPLETE IF KNOWN

Application No.

Filing Date

Group Art Unit

Examiner's Name

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

BARRIER MATERIALS AND PRODUCTS PRODUCED THEREWITH

the specification of which
(check one)
is attached hereto.



Was filed on January 18, 1999 as United States Application No. or

PCT International Application No. GB99/00044

And was amended on (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YY)	Priority Not Claimed	Certified Copy Attached?	
				Yes	No
9800814.7	GB	01/16/1998		<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	<input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

U.S. Parent Application or PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)

☐ Additional US or PCT International application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

☐

Customer Number



OR

Place Customer
Number Bar Code
Label Here

☐

Registered practitioner(s) name/registration number listed below.

Name	Registration Number	Name	Registration Number
Thomas Q. Henry	28,309		

☒ Additional registered practitioner(s) named on supplemental Registered Practitioner Information sheet PTO/SB/02C attached hereto.

Direct all correspondence to:

☒Customer Number
Bar Code Label

OR

☐

Correspondence address below

Name	Thomas Q. Henry				
Firm Name	WOODARD EMHARDT NAUGHTON MORIARTY & McNETT				
Address	111 Monument Circle, Bank One Tower Suite 3700				
City	Indianapolis	State	IN	ZIP	46204
Country	USA	Telephone	317/ 634-3456	Fax	317-637-7561

I hereby declare that all statements made herein of my own knowledge are true and that all statements made in information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor:

Given Name (first and middle, if any)	Robert	Family Name or Surname	Moule
Inventor's signature:		Date of Signature:	1-9-00
Residence:	Ashfields, Leigh Sinton		
City, State, Country)	Malvern, Worcestershire, United Kingdom GBX		
Citizenship:	GB		
Post Office address:	Ashfields, Leigh Sinton Malvern, Worcestershire WR13 5DH, United Kingdom		

Full name of additional joint inventor, if any:

Given Name (first And middle, if any)	Simon		Family Name or Surname	Moule
Inventor's Signature:	Sim P. Moule		Date of Signature:	9/9/00
Residence: (City, State, Country)	42 Endymion Road, London, N4 1EQ, United Kingdom GBX			
Citizenship:	GB			
Post Office Address:	42 Endymion Road, London, N4 1EQ, United Kingdom			
Full name of additional joint inventor, if any:				
Given Name (first And middle, if any)			Family Name or Surname	
Inventor's Signature:			Date of Signature:	
Residence: (City, State, Country)				
Citizenship:				
Post Office Address:				
Full name of additional joint inventor, if any:				
Given Name (first And middle, if any)			Family Name or Surname	
Inventor's Signature:			Date of Signature:	
Residence: (City, State, Country)				
Citizenship:				
Post Office Address:				
Full name of additional joint inventor, if any:				
Given Name (first And middle, if any)			Family Name or Surname	
Inventor's Signature:			Date of Signature:	
Residence: (City, State, Country)				
Citizenship:				
Post Office Address:				

Please type a plus sign (+) inside this box → ☐

Approved for use through 9/30/98. OMB 0851-0002
 Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE
 Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a
 valid OMB control number.

DECLARATION**REGISTERED PRACTITIONER
INFORMATION
(Supplemental Sheet)**

Name	Registration Number	Name	Registration Number
Harold R. Woodard	16,214		
C. David Emhardt	18,483		
Joseph A. Naughton, Jr.	19,814		
John V. Moriarty	26,207		
John C. McNett	25,533		
Thomas Q. Henry	28,309		
James M. Durlacher	28,840		
Charles R. Reeves	28,750		
Vincent O. Wagner	29,596		
Steve Zlatos	30,123		
Spiro Bereveskos	30,821		
William F. Bahret	31,087		
Clifford W. Browning	32,201		
R. Randall Frisk	32,221		
Daniel J. Lueders	32,581		
Kenneth A. Gandy	33,386		
Timothy N. Thomas	35,714		
Kerry P. Sisselman	37,237		
Kurt N. Jones	37,996		
John H. Allie	39,088		
Holiday W. Banta	40,311		
Troy J. Cole	35,102		
L. Scott Paynter	39,797		
J. Andrew Lowes	40,706		
Charles J. Meyer	41,996		
Darrin Wesley Harris	40,636		
Matthew R. Schantz	40,800		
Gregory B. Coy	40,967		
Lisa A. Hiday	40,036		
John V. Daniluck	40,581		
Christopher A. Brown	41,642		
Jason J. Schwartz	43,910		
Arthur J. Usher IV	41,359		
Douglas A. Collier	43,556		
Scott J. Stevens	29,446		
James B. Myers	42,021		

Burden Hour Statement: This form is estimated to take 0.4 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Rev 3/19/99

::ODMA\PCDOCS\WENMM_DB4228\I